

# PATENT ABSTRACTS OF JAPAN

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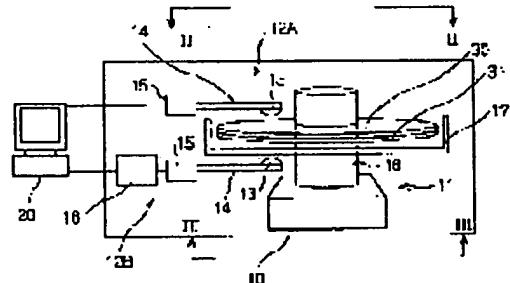
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## (54) OPTICAL DISK DRIVE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an optical disk drive which can simultaneously record and reproduce signals on both recording surfaces of a double-sided disk.

**SOLUTION:** The optical disk drive 10 is composed of a disk drive mechanism 11 for rotating a double-sided disk 30 and recording/reproducing means 12A, 12B provided corresponding to both sides of the disk 30. With a command from a computer system 20, simultaneous and independent access can be made to respective optical disk 31 of the double-sided disk 30. One recording/reproducing means 12B is provided with a buffer 16 which drives serial data for each track and inverses the time sequence of the serial data within this division. The data recorded in both optical disks 31 has compatibility with each other and with the data recorded in the other disk drive so that access can be made by any recording/reproducing means 12A, 12B or by the other disk drive.



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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]****[0001]**

[Field of the Invention] This invention relates to an optical disk unit, and relates to the optical disk unit which records / reproduces data to double-sided disks, such as lamination structure, especially.

**[0002]**

[Description of the Prior Art] The lamination disk (double-sided disk) of the structure which carries out each recording surface outside and stuck the optical disk of two sheets is known. The optical disk unit which prepared pickup (optical head) in each of the optical disk of two sheets in this lamination disk with the conventional optical disk unit is also known. The pickup of both sides is mutually countered and arranged on both sides of a lamination disk, and tracking control is simultaneously carried out with one actuator. Here, during one record/playback of pickup, the pickup of another side has suspended the function, and, as for the optical disk of two sheets, every one sheet of the data is recorded / reproduced one by one.

**[0003]**

[Problem(s) to be Solved by the Invention] In the above-mentioned conventional optical disk unit, record/playback of data cannot be performed to the optical disk of another side during record/playback of one optical disk of a lamination disk. That is, in the above-mentioned optical disk unit, since record/playback cannot perform two pickup simultaneously, it cannot respond to improvement in the speed of the record/playback of data demanded by the multitasking feature. For this reason, both recording surfaces are expected the optical disk unit which has the record/reproducing head which can be accessed simultaneously, and it is possible to form an actuator independently of two pickup in this case.

[0004] However, since each recording surface turns to hard flow, and the optical disk of two sheets is arranged and rotates to one, the sequence of the record/playback in each truck becomes hard flow between [ both ] optical disks. For this reason, unless the hand of cut of a disk is made into reverse, about both recording surfaces, there is no compatibility in record/playback of data. That is, in operating the pickup of both sides simultaneously, the data which could not reproduce the data recorded by the pickup of one side by the pickup of another side, and were recorded with another optical disk unit have the problem of being unrepeatable, in the pickup of either of this optical disk unit.

[0005] This invention aims at offering the optical disk unit for a double-sided disk in which record/playback is possible so that the demand of improvement in the speed of the record/playback of data demanded by the multitasking feature adopted with a personal computer etc. can be met in view of the above and it may have the compatibility of data between [ of two sheets ] recording surfaces.

**[0006]**

[Means for Solving the Problem] In order to attain the above-mentioned object, the optical disk unit of this invention In the optical disk unit for the double-sided disk which has the recording surface by which two or more trucks were arranged on the front reverse side The rolling mechanism which makes one rotate a double-sided disk, and two the records/reproducing heads by which are arranged corresponding to a recording surface and position control is carried out independently of mutual, It is inserted between

one record/reproducing head, and a signal input/output terminal, and has an output reversal means by which serial data can be transmitted bidirectionally. This output reversal means The inputted serial data is classified for every data partition corresponding to said each truck, and it is characterized by reversing the chronological sequence of the data inside this data partition.

[0007] In the optical disk unit of this invention, since position control of the record/the reproducing head prepared corresponding to each recording surface is carried out independently, respectively, both record/reproducing heads can be independently accessed to each recording surface. Therefore, both record/reproducing heads can be operated simultaneously. Here, since the serial data which should be recorded on one [ the serial data reproduced from one recording surface or ] recording surface with the output reversal means inserted between one record/reproducing head, and an external signal input/output terminal can reverse the chronological sequence of data for every data partition corresponding to each truck, also in case it accesses both recording surfaces simultaneously, compatibility produces it in record/playback of data about both recording surfaces.

[0008]

[Embodiment of the Invention] Hereafter, based on the example of 1 operation gestalt of this invention, this invention is further explained to a detail. II-II view drawing of drawing 1 and drawing 3 of the typical perspective view in which drawing 1 shows the configuration of the optical disk unit of this example of an operation gestalt, and drawing 2 are III-III view drawings of drawing 1. In these drawings, an optical disk unit 10 consists of a disk drive 11 which carries out revolution actuation of this, supporting the lamination disk (double-sided disk) 30 which consists of the optical disk 31 of two sheets, and the two record/playback sections 12A and 12B which record / reproduce the corresponding data of a recording surface independently, respectively, and the input/output terminal of each record/playback section 12 is connected to each input/output terminal of a computer system 20.

[0009] The lamination disk 30 is constituted as a double-sided disk of the structure where the optical disk 31 of two sheets turns outside the recording surface which accomplishes the front face, respectively, and was stuck with the rear face. In addition, if it is a double-sided disk, even the structure stuck physically will not necessarily be required. Each record/playback sections 12A and 1B are further inserted in one record/playback section 12B between the signal-processing section 15 and a computer system 20 including pickup 13, an actuator 14, and the signal-processing section 15, respectively, and the data pars inflexa 16 which reverses the chronological sequence of data is formed.

[0010] the tray 17 which has the slot in which a disk drive 11 holds a lamination disk, and a disk 30 and a tray 17 -- one -- and it consists of the revolution actuator 18 which rotates a direction on the other hand. Each pickup 13 is driven with the actuator 14 corresponding to each, moves to radial [ of a disk 30 ] and is independently positioned to the truck of the corresponding optical disk 31, respectively. Based on the command of a computer system 20, each pickup 13 records data independently to the corresponding optical disk 31, respectively, and reproduces data independently from the corresponding optical disk 31, respectively.

[0011] Record/playback sections 12A and 12B are constituted as the bidirectional signal transduction section which is arranged between corresponding pickup 12 and computer systems 20, carries out A/D conversion of the signal reproduced by pickup, transmits to a computer system, and carries out D/A conversion of the data from a computer system, and is transmitted to pickup. A buffer 16 once stores in the interior the digital signal which was formed in one record/playback section 12B, and was acquired in the corresponding signal-processing section 15, classifies this digital signal for every data partition corresponding to each truck, and after reversing the chronological sequence of serial data within each data partition, it transmits it to a computer system 20. On the contrary, the data outputted from the computer system 20 are once stored in the interior, and are classified for every data partition which correspond for every truck of an optical disk 31, and after reversing chronological sequence within a data partition similarly, the signal-processing section 15 is supplied.

[0012] By the above-mentioned configuration, the computer system 20 is independently [ that it is simultaneous and ] accessible to the optical disk 31 of two sheets through each pickup 13. Therefore, from a computer system 20, it seems that two disk units which may be operated independently are

connected. Moreover, in connecting two or more computer systems 20 to the optical disk unit 10 of this example of an operation gestalt, to each optical disk 31, access becomes possible from two computer systems 20 simultaneously. Therefore, improvement in the speed of the data access in the computer system which the latency time in a computer system decreases and adopts especially a multitasking feature is possible.

[0013] Moreover, even if it makes the lamination disk 30 into vertical reverse in the above-mentioned optical disk unit 10, record/playback is possible. That is, the data which compatibility is in the data of both optical disks even if it fixes the hand of cut of a disk to an one direction in both optical disks 31, and were recorded by these are reproducible with another optical disk unit.

[0014] The optical disk unit of this invention can be suitably used as external storage, such as a personal computer and an office computer. Moreover, it can constitute only as external storage of an external mold as built-in external storage built in a note type or a desktop mold personal computer.

[0015] As mentioned above, although this invention was explained based on the suitable example of an operation gestalt, the optical disk unit of this invention is not limited only to the configuration of the above-mentioned example of an operation gestalt, and the optical disk unit which performed various corrections and modification from the configuration of the above-mentioned example of an operation gestalt is also contained in the range of this invention.

[0016]

[Effect of the Invention] As mentioned above, since the compatibility of data arises in both recording surfaces according to the optical disk unit of this invention while being able to perform record/playback of data at a high speed by operating independently two record/reproducing heads as explained, this invention does so the effectiveness which offered the optical disk unit which has a function for two sets substantially with one optical disk unit.

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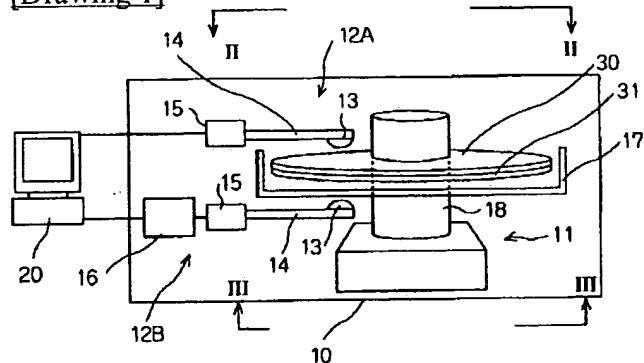
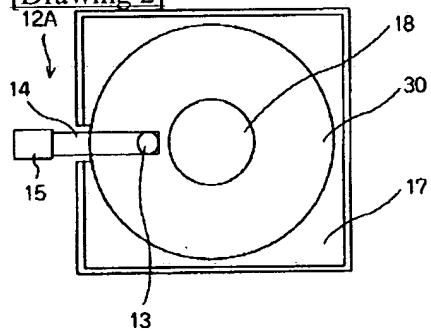
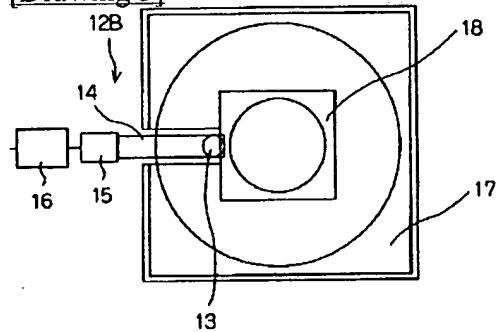
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**DRAWINGS****[Drawing 1]****[Drawing 2]****[Drawing 3]**

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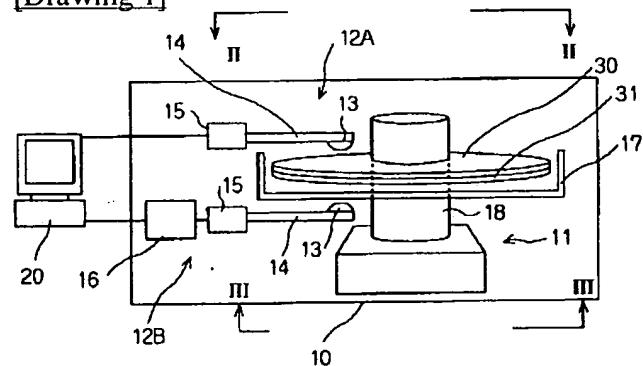
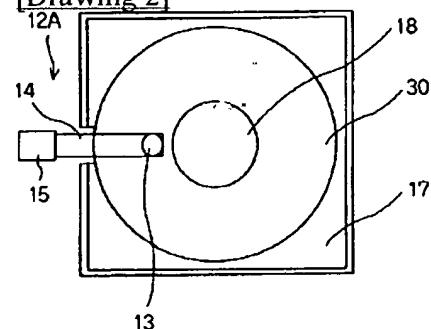
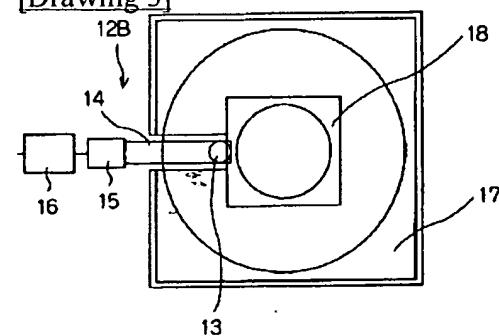
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**DRAWINGS**

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**[Drawing 1]****[Drawing 2]****[Drawing 3]**

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